FOOD TECHNOLOGY

Published Monthly by

The Institute of Food Technologists

Volume 4 | June, 1950 | Number 6

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Authors of papers intended for publication in Food Technology should request from the Editor's office a copy of a booklet, titled "Suggestions to Authors," and see that their papers are in the form specified therein before they are sent to the editor.

The Institute of Food Technologists assumes no responsibility for statements in contributed articles appearing in Food Technology. Editorials present only opinions of the writers and do not necessarily reflect policies of the Institute of Food Technologists.

Abstracts

(Continued from page 4)

stant in amount, whatever the nature of the medium. The concentration of methionine in yeast protein could be increased by increasing its concentration in the medium.

157J. Growth and fermentation factors for different brewery yeasts.

ATKIN, L., et al. *Biochim. Biophys. Acta, 3,* 692-708 (1949).

In the growth studies, it was found that lager yeast of different strains showed marked differences in their growth requirements. These growth requirements were found to be relatively stable and could be used to identify certain specific strains of yeast. In the fermentation studies, yeast nutrients were combined to produce a medium in which the fermentation rate was equal to that obtainable with beer wort. In the third phase of the work, this medium was employed under conditions of brewery fermentation such that both growth and fermentation occurred and, in this instance, it was found that inositol played a very important role in determining the rate of attenuation. The significance of this finding was further investigated with different brewery yeasts.

NUTRITION

158J. The effect of carbohydrate on the nutritive value of heated lactalbumin.

MADER, I. J., SCHROEDER, L. J., AND SMITH, A. H. *J. Nutr., 39,* 341-55 (1949).

Heating commercial lactalbumin in the dry state for 60 min. at 100° C. has no effect on its nutritional quality. Digestibility and nutritive index, however, were found to be significantly decreased by autoclaving, and the severity of the damage was directly proportional to the severity of the treatment. Heating extracted lactalbumin in the presence of lactose impairs the nutritional value.

159J. The relationship of carbohydrate metabolism to protein metabolism. III. Further observations on time of carbohydrate ingestion as a factor in protein utilization by the adult rat.

MUNRO, H. N. *J. Nutr., 39,* 375-91 (1949).

Adult male rats were first given a diet with the protein fed apart from the carbohydrate and then the same diet with most of the carbohydrate fed along with the protein. The immediate effect of this change in the time of feeding carbohydrate was a considerable improvement in N balance. After a few days, however, N balance returned to its original level. Subsequent separation of the times of ingestion of carbohydrate and protein caused a transient impairment of N balance. It has been concluded that protein utilization is affected by the presence of carbohydrate in the same meal.

160J. The nutritional effects of heat on food proteins, with particular reference to commercial processing and home cooking.

MITCHELL, H. H., HAMILTON, T. S., AND BEADLES, J. R. *J. Nutr., 39,* 413-25 (1949).

The effects of home cooking and commercial processing were investigated with the proteins of sunflower seed meal, cottonseed meal, corn and peanut meal. The biological value of the proteins of peanut, sunflower seed, and cottonseed meals were definitely decreased by processing. The percentage of total heat damage was highest for corn, followed by peanut meal, sunflower seed meal, and cottonseed. No heat damage was demonstrated in the roasting of beef.

161J. A study of the protein value of soy and peanut flours in stock diets for rats.

WALDO, M. M., AND GODDARD, V. R. *J. Home Econ., 42,* 112-15 (1950).

With 76 young male albino rats, the adequacy of soy and peanut flours as replacements for a portion of the animal protein in a stock diet was studied. The control diet (a) contained 25% protein, with casein, wheat, and skim milk as the major protein sources. The experimental diets—(b) peanut and (c) soy—had the same amount of protein and essentially identical formulas except that the casein was replaced by soy and by peanut flours. The ratio of animal to plant protein was changed from 1:0.5 to 1:2. It was found that soy and peanut flours were equally efficient in replacing the casein. The control casein diet produced significantly greater and more efficient growth than the two experimental ones. The average gain per g. protein consumed was 1.03 on the peanut diet, 1.04 on the soy, and 1.16 on the casein. From the results, it was concluded that (a) the experimental peanut and soy diets, though less efficient than the casein, produced very good growth rates and that (b) peanut and soy flours could be used effectively and economically to conserve animal protein in stock diets for rats.

162J. The use of rice as a cereal food for infants.

BENSON, R. A., SCHNEIDER, M., AND BRAND, D. *Arch. Pediat., 66,* 209, May, 1949; *Am. J. Dig. Diseases, 17,* 25-6, Jan., 1950.

A controlled feeding experiment of 47 normal infants was made. Rice was least allergenic of all cereals. The use of cream of rice produced better weight gain. Stools showed increased amount of microscopic starch granules. No gastro-intestinal disturbances were noted.

163J. Studies of the action of sodium fluoride on human enamel by electron microscopy and electron diffraction.

SCOTT, D. B., PICARD, R. G., AND WYCKOFF, R. W. G. *Pub. Health Repts., 65,* 43-56 (1950).

Electron micrographs have been made of replicas of the surfaces of enamel slabs treated with NaF solutions for lengths of time between 5 minutes and 30 days. Few visible surface changes were recognized when the treatment was less than a week. Small amounts of deposit were noted after 7 days. Greater quantities were seen after 15- and 30-day treatments. It was not visible after the prolonged washing of 30-day treated specimens. Preliminary but inconclusive tests were made of the relative acid solubilities of untreated enamel and enamel after immersion in NaF. Electron diffraction patterns have been made from the surfaces of enamel slabs before and after immersion in NaF for periods from 3 minutes to 30 days. In all instances the original apatite pattern was converted to that of CaF_2. The CaF_2 pattern reverted to that of apatite when specimens treated for 3 minutes with NaF were washed for 90 minutes in water, but when specimens treated for 30 days were washed for 6 days, the reversion did not occur in all instances. Electron micrographs of surfaces after diffraction showed amounts of deposit to be expected from the treatments they had undergone.

164J. Role of vitamin B_{12} in reproduction of poultry.

LILLIE, R. J., OLSEN, M. W., AND BIRD, H. R. *Proc. Soc. Exptl. Biol. Med., 72,* 598-602 (1949).

When hatching eggs laid by Rhode Island Red hens fed a diet deficient in vitamin B_{12} were injected with crystalline vitamin B_{12}, the hatchability was improved. Among the chicks hatched from vitamin B_{12} injected eggs, the growth rate was greater, the mortality lower and the feathering better than among chicks hatched from H_2O-injected and non-injected eggs.

FOOD PRODUCTS

BAKING AND BAKERY PRODUCTS

165J. Reaction of dough and gluten with glucose.

HLYNKA, I., AND BASS, E. J. *Cereal Chem., 26,* 513-18 (1949).

The application of the Chapman and McFarlane ferrometric reduction test to studies on dough and gluten shows that a reaction with glucose takes place. This evidence supports the hypothesis that reducing carbohydrates in dough and gluten may act as cross-linking agents between protein chains to form a three-dimensional elastomer network.

166J. Saving "dough" on bread dough.

Modern Plastics, 27, 120, Jan., 1950.

The use of tetrafluoroethylene for coating of rolls that came in contact with live dough is described. This prevents sticking of dough to rolls. Savings of $20/day/machine are reported.

(Continued on page 16 following technical papers)

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	Pectinesterase	Experimental	Demethoxylates pectin without hydrolysis of the galacturonic acid chain. pH range 3.5 - 5.
Proteolytic	RHOZYME P-11	Commercial	Hydrolyze proteins to peptides and amino acids. pH ranges 5.5 - 8.5. (Relative amounts of peptides and amino acids will differ for each proteolytic enzyme.)
	Protease 15	Experimental	
	Protease 16	Experimental	
Amylolytic	RHOZYME S	Commercial	Hydrolysis of starch to dextrins, maltose and glucose. Contain both an alpha amylase and a strong glucogenic principle. pH range 5 - 6. RHOZYME S is a purified enzyme; RHOZYME T-22 the crude product.
	RHOZYME T-22	Commercial	
	RHOZYME DX	Commercial	Hydrolysis of starch to dextrins. Heat stable. pH range 5.5 - 6.5.
Lactase	Lactase A	Experimental	Hydrolysis of lactose to glucose and galactose. pH range 6.1 - 7.5.

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ALUMINUM FOIL FOR FOOD PROTECTION

A statement by the foremost experts in foil packaging...world's largest producers of Aluminum Foil: Reynolds Metals Company

The primary advantage of aluminum foil for food protection is its high resistance to Moisture-Vapor Transmission—either to prevent dehydration, as in frozen foods, or to exclude moisture as from dehydrated soups. A similarly high degree of impermeability to volatile oils and odors is an important advantage to many products. Exclusion of light rays may be a benefit in some cases.

Typical packages using Reyseal

These advantages, recognized by food technologists, can *always* be achieved in maximum degree by a sufficient thickness of aluminum foil, providing the package can be adequately closed or sealed. The Reynolds Metals Company is foremost in the development of all-aluminum packages—including the versatile Reynolds Pak, a one-piece semi-rigid tray with crimp-on lid.

Practically, however, the factors of expense, availability for automatic wrapping and special sealing requirements often make desirable combinations of aluminum foil with other materials.

Hence there arose the wide field of laminated-foil packagings, in which Reynolds has pioneered. These include aluminum foil laminated to various types of paper and plastic film. "Reyseal" is the trade name given to only one broad classification—an aluminum foil and paper structure which utilizes the wax within the sheet to effect a heat seal at the point at which heat is applied.

Reynolds technical laboratories make elaborate tests to determine the values of different foil and foil-laminated packagings, as compared with other materials, for particular food products. The following is a typical test case:

PRODUCT: A dehydrated soup.

CONDITIONS: Four weeks at 100° F., 90% relative humidity.

MATERIALS: 1. Carton overwrapped with Reyseal "O" and waxed paper applied in a single wrapping operation.
2. Carton overwrap: Reyseal "502."
3. Carton made from Reyseal board.
4. Non-foil carton and liner.

RESULTS: Packages 1, 2 and 3 maintained edibility, good odor, flavor and appearance as long as three weeks, whereas product in package 4 lost flavor and acquired musty odor and taste within a week. Package 1 provided 18 times more protection from moisture gain than package 4; package 2 provided 12 times more protection; package 3, 4 times more.

A commercial use of Reynolds Pak

RECOMMENDATION: Package 1.

Food product packers are invited to submit samples for testing. Address requests to **Reynolds Metals Company,** Richmond 19, Va.

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UNIFORM TASTE-TEST METHODS SOUGHT IN FOOD RESEARCH

Agreeing that laboratory methods of taste-testing foods need to be standardized, 71 research scientists from all areas of the United States recently held a 3-day conference at the U. S. Department of Agriculture in Washington, D. C.

The conference, arranged by the Bureau of Human Nutrition and Home Economics, was attended by representatives from many fields of laboratory research, including home economists, food technologists, chemists, biologists, horticulturists and statisticians.

In calling the conference, the Bureau explained that so varied are laboratory methods of selecting food judging panels, preparing food samples, setting up rating scales, and analyzing statistical findings, that one laboratory often cannot compare its work with that of others. The problem has become more acute with an increase in research on food quality.

It was emphasized that the conference would not deal with problems of the marketing analyst who uses untrained taste-testing panels to forecast consumer acceptance of a product.

In preparation for the conference, staff members reviewed 350 bulletins and journal articles on methodology in palatability testing, and surveyed procedures for testing food quality by sensory organs. The review was mimeographed for use at the conference.

The conference closed with ten committee reports, based on the general discussion sessions. They cited techniques thought to be desirable and made recommendations as to needed lines of research.

ALUMINUM IN FOOD PROCESSING EQUIPMENT

Book, Aluminum and Aluminum Alloys in the Food Industry, by J. M. Bryan, published by Department of Scientific and Industrial Research (H. M. Stationery Office, York House, Kingsway, London, W. C. 2, England), 153 pp. In English. Reviewed by Ernest Hess.

A systematic study with an extensive bibliography, this publication discusses various types of corrosion of aluminum and aluminum alloys by aqueous solutions (acids, alkalis and bases, water, dissolved salts) and by food products (fruit and vegetable products, beverages, meat and dairy products).

(Continued on 3rd cover)

Notes and Letters

Vegetable Juice Agar as a Culture Medium*

Yeast sporulation has been induced by growth on gypsum blocks and sterile vegetable slices. An adaptation of the latter technique involves the solidification of certain vegetable juices with the aid of agar. A further refinement of this procedure described by Wickerham, Flickinger and Burton (*J. Bact., 52,* 611, 1946) entails the solidification of canned mixed vegetable juices to which yeast cake has been added.

During a recent study the above medium was used to bring about yeast sporulation. Stock cultures of various yeast strains were carried on wort agars and transplants were made simultaneously with vegetable juice agar (VJA) inoculation. It was observed that growth appeared much sooner on the VJA slants than on the wort transplants. These observations were confirmed by expanding the use of VJA to many yeast strains including *Saccharomyces ellipsoideus (Tokay), (Champagne), (Bergundy), (Jerez), Saccharomyces cerevisiae (Bakers')*, a culture of *Saccharomyces spp.* isolated from spoiled salad dressing and *Zygosaccharomyces spp.* from the same source. In all instances growth appeared sooner and was more profuse on VJA than on wort agar.

A further study was made wherein the two media were compared as contact plating media for mold counting. In the several studies made 20% more VJA agar plates showed growth than did wort agar plates. Further, growth appeared sooner on VJA than on wort agar.

The organism responsible for flat sour spoilage of tomato juice, *Bacillus thermoacidurans,* has been described by Stern, Hegarty and Williams (*Food Res., 7,* 186, 1942) as extremely difficult to subculture. When cultured on VJA agar this organism grew more rapidly and profusely than it did on proteose peptone acid agar. Excellent growth was also shown by *Lactobacillus lycoperisci,* another acid food spoilage organism. No observations were made on morphological changes.

ROY E. MORSE
Monsanto Chemical Company,
Anniston, Alabama.

EVAN K. HEATON
University of Georgia, Athens,
Georgia.

* In these studies V8, a mixture of tomato, celery, carrot, parsley, lettuce, beet, spinach and watercress juices was used as recommended by Wickerham, Flickinger and Burton. There are other commercial juices available which presumably give similar results, but they were not tried.

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FOOD TECHNOLOGY

Official Monthly Publication of
The Institute of Food Technologists

Publication Office

Published by the Institute of Food Technologists and printed by The Garrard Press, 119-123 West Park Avenue, Champaign, Illinois.

Correspondence

EDITORIAL: Address all manuscripts, correspondence regarding manuscripts, proofs, etc. to C. Olin Ball, Editor, Department of Food Technology, New Jersey Agricultural Experiment Station, New Brunswick, New Jersey.

MEMBERS' SUBSCRIPTIONS: Correspondence regarding a member's subscription should be sent to The Garrard Press, Champaign, Illinois or to C. S. Lawrence, Executive Secretary, Suite 954, 222 West Adams Street, Chicago 6, Illinois.

Back Volumes and Single Copies: FOOD TECHNOLOGY, 119-123 W. Park Ave., Champaign, Illinois.

Advertising: For advertising rates and information about advertising in FOOD TECHNOLOGY write to Harley L. Ward, Advertising Manager, 360 N. Michigan Ave., Chicago 1, Illinois.

Eastern Advertising Office: Duncan Macpherson, 700 S. Washington Square, Philadelphia 6, Pennsylvania.

Reprints: FOOD TECHNOLOGY, 119-123 W. Park Ave., Champaign, Illinois.

Subscription Rates

Subscriptions are entered for all members of the Institute of Food Technologists. The cost is included in the annual dues.

Non-members: domestic, $7.50 per year; foreign, $8.50 per year.

Single copies: domestic, $1.00 each; foreign, $1.15 each.

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Mailing Permit

Entered as second-class matter February 25, 1947, at the post office at Champaign, Illinois, under the act of August 24, 1912.

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CANDY MADE FROM SWEET POTATOES

"Candies from Sweet Potatoes," a topic highly publicized during World War II due to results of experimental research at the A. P. I. Agricultural Experiment Station at Auburn, Alabama, is today coming back into the headlines as a result of current research at the same Station.

A recently completed nationwide consumer acceptance test of one of these new candies—a cocoanut brittle made from sweet potatoes—indicates that more than 40 percent of the Nation's consumers like this new candy product as well as or better than the candies they are currently buying and eating. This new type candy stands up better in comparison with brittles and hard candies than with other candies.

More than a third of the individuals who tested this candy indicated that they would buy the product if it were available on the market. In addition, more than half like the texture or quality of the product and about one-half like its flavor or taste. A. P. I. Agricultural Experiment Station Bulletin No. 271, "Consumer Reactions to Alayam Candy" reports the detailed findings of this survey.

Copies of the report "Consumer Reactions to Alayam Candy," A. P. I. Experiment Station Bulletin No. 271, are available upon request from the Publications Department, A. P. I. Agricultural Experiment Station, Auburn, Alabama.

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Regional Section News

FLORIDA SECTION

The April meeting was held on the 20th at the Angebilt Hotel, Orlando, Fla. Dr. F. W. Tanner, for many years head of the Department of Bacteriology, University of Illinois, and author of several textbooks on bacteriology, spoke on "What is Sanitation"?

Dr. Tanner has now retired and is living at Winter Park, Fla.

NEW YORK SECTION

A dinner meeting was held at the Brass Rail, New York City on April 11th, attended by 141. S. W. Arenson, Chief of Fundamental Research Laboratories, Doughnut Corporation of America, gave an interesting illustrative talk relative to shortening requirements in various food field applications, and problems encountered in their use.

MARYLAND SECTION

The April meeting was held at the Hotel Stafford in Baltimore on the 14th. Dr. E. Everett Meschter of the American Preserve Co., and also Chairman of the Technical Committee of the National Preservers' Association, spoke on "Jams and Jellies."

PHILADELPHIA SECTION

Dr. Joseph W. E. Harrison, Director of LaWall and Harrison of Philadelphia, addressed the Section at its April meeting on the 19th. Dr. Harrison, who is a consultant to the Pennsylvania Department of Agriculture, Chairman of the Board of Chemists and Professor of Pharmacy, and Director of the Liffman-LaWall Laboratory of the Philadelphia College of Pharmacy, chose as his subject:: "Adulteration of Foods." His address was illustrated with color slides.

GREAT LAKES SECTION

The Section held an all-day meeting on April 14th. In the morning, members and guests toured the campus and laboratories of Michigan State College. After a lunch at Union Cafeteria the afternoon session consisted of the following:

Angles on quality control for the not-so-large food producers. Prof. Thomas Ousdorff, Oregon State College.

Dietary habits of the Liberian natives. George A. Bowie, Dept. Public Relations, Firestone Tire and Rubber Co.

Certified Food Colors. W. H. Kretlow, Director of Production and Research, Color Division, Wm. J. Stange Co.

The evening program consisted of music by members of the Michigan State College Music Department; an address by Dr. John A. Hannah, President of the College; and a motion picture of the 1949 Michigan State College-Notre Dame football game.

NORTHERN CALIFORNIA SECTION

The Section met on April 27th at the California and Hawaiian Sugar Refining Corporation, Crockett. The meeting consisted of plant inspection followed by a dinner in the Community Auditorium and a technical discussion. C. and H. refinery is the largest single refinery in the world, having a daily capacity of over 3,000 tons of sugar and annually refines over 10% of the entire nation's requirements.

PERSONNEL

J. L. Heid, formerly Director of Research of the Florida Citrus Canners Cooperative at Lake Wales, Florida has resigned to become general manager of the Golden Citrus Juice Co., Fullerton, California. Larry has a fine parcel of land (that costs a ridiculous sum to keep landscaped) on a lake near Lake Wales. Any one interested?

Paul Kolachov, Director of Research at Joseph E. Seagram & Sons, Inc., Louisville, Kentucky, has been elected to the Board of Governors of the National Farm Chemurgic Council.

Eugene J. Kraska, formerly conducting his own canned food laboratory at Manitowoc, Wisconsin, has joined the Association of American Railroads, Freight Claims Division, Chicago, as canned food specialist. His new duties will be to investigate the causes of damage to canned goods and suggest preventive measures. He will also cooperate with can manufacturers and trade associations in matters of common interest. It is anticipated that this work will be instrumental in assisting the railroads and their patrons in reducing damage to canned goods, which in 1948 amounted to over 7.5 million dollars, an increase of 20.4% over 1947, with a still further increase indicated for 1949.

Carl S. Miner, Director, Miner Laboratories, Chicago, has been elected to the board of directors of Commercial Solvents.

H. W. Putnam, formerly chemist with the Central Laboratories, Colorado Milling Co., is now Director of Research, Ballard and Ballard Co., Louisville, Kentucky.

Harry Pancoast is now with American Home Food Products, San Jose, California.

Gustave T. Reich has recently returned from a five weeks' trip to Guatemala, where he did some consulting work on alcohol and sugar production. Dr. Reich reports that Guatemalan rum is quite palatable even though it does contain a high percentage of aldehyde and fusel oil.

Leonard J. Vinson, formerly biochemist, Armour Research Foundation, Chicago, has been appointed director of biochemical research at Lever Brothers, Cambridge, Mass.

Ralph C. Zalkan, formerly of the Food Technology Department of the University of Massachusetts, is now a graduate student at Michigan State College.

Two members of IFT have made the cover of *Chemical & Engineering News* within a space of six weeks: George A. Richardson of the Oregon Section (March 13th issue), and Arie Jan Haagen-Smit (April 24th issue) of the Southern California Section.

NECROLOGY

E. H. Bell, Pacific Coast President of American Can Co., died in San Francisco on January 12, 1950. He was 61 years old.

HONORS

Carl R. Fellers, President of the Institute of Food Technologists, and Chairman of the Department of Food Technology of the University of Massachusetts, received the 1950 Babcock Award at the Annual Con-

ference of the Institute held in Chicago in May. Dr. Charles G. King made the presentation.

William F. Geddes, Chief of Biochemistry Division, University of Minnesota, was named recipient of the Thomas Burr Osborne Medal of the American Association of Cereal Chemists, for his "distinguished contributions in cereal chemistry." The medal has been conferred only seven times previously in the entire history of the Association. The medal was founded in 1926, and Osborne, who was for a long time connected with the Connecticut Agricultural Experiment Station, received the medal in 1928 and was the first recipient.

AUSSIES CUT UP

The Food Technology Association of Victoria had a cutting bee and buffet supper at the William Angliss Food Trades School in Melbourne on March 9th. The items cut included an ice cream mix, apricot jam and steak and kidney pudding supplied by different competitors.

Book Review

ADVANCES IN FOOD RESEARCH, VOLUME 2. Edited by E. M. Mrak, University of California, Berkeley, California, and G. F. Stewart, Iowa State College, Ames, Iowa. Academic Press Inc., 125 East Twenty-third Street, New York 10, N. Y., 1949. 558 pages. Price $8.80.

The present volume is the second of a series about Advances in Food Research. It presents nine reviews by thirteen authors of the following subjects: 1) Ion exchange application by the food industry, by George E. Felton; 2) Thermobacteriology as applied to food processing, by C. R. Stumbo; 3) The quaternary ammonium compounds and their uses in the food industry, by Cecil Gordon Dunn; 4) The pharmacology of DDT, by Arnold J. Lehman; 5) Analysis of foods by sensory difference tests, by Mildred M. Boggs and Helen L. Hanson; 6) The chemistry of fruit and vegetable flavors, by Justus G. Kirchner; 7) Histological changes induced in fruits and vegetables by processing, by T. Elliot Weier and C. Ralph Stocking; 8) The spoilage of fish and its preservation by chilling, by G. A. Reay and J. M. Shewan; 9) Spray drying of foods, by Edward Seltzer and James T. Settelmeyer.

The author of the section on ion exchange resins discusses cation and anion exchangers, the factors controlling the phenomenon, and specific industrial applications. It is an excellent resume of an increasingly important aspect of food technology. General interest in this subject is shown by reference to 144 literature citations.

The review of thermobacteriology is a model of conciseness and clarity. The author has digested and set down in one place information that is widely scattered in the literature. The reader will find it a veritable mine of information.

Interest in quaternary ammonium compounds has accelerated at a rapid rate in recent years. An astonishing volume of literature—more than 300 references—is reviewed concisely by the author of this section.

The pharmacology of DDT is treated in a short review that brings the reader up to date on an important aspect of food technology in which there is considerable present interest.

The section on the analysis of foods by sensory difference tests deals with methods for the appraisal of foods through the use of the senses as distinguished from physical and chemical methods. It is not concerned with consumer preference studies with which it is too often confused. The authors bring together in clear and lucid fashion the best thought on the subject, and many readers should find the discussion interesting and useful.

The chemistry of fruit and vegetable flavors is exceedingly complex and the difficulty of working with them is greatly accentuated by their instability. The author of this section reviews existing information about this much negelected field of research and stresses the fact that even in the limited field explored, the identification of flavor components is meager and incomplete. It is interesting to note that among the 171 references cited roughly two thirds are from foreign journals, a circumstance that might be construed to indicate greater interest in the subject abroad than at home.

Histological changes induced in fruits and vegetables by processing are described in another section in a thought-provocative manner. The authors point out what happens to various tissues during processing and the influence of these changes on quality. Illustrations of tissue sections are interesting and clear.

The bacteriology and biochemistry involved in the deterioration of fresh fish is treated in a section on the spoilage of fish and its preservation by chilling. The authors describe the influence of present methods of handling on ultimate quality. There is much of practical value in this competent review.

Those interested in spray drying of foods will find in this section a description of the various spray drying procedures and equipment well illustrated with diagrams and photographs. General principles and engineering data are stressed rather than applications to specific foods. This type of treatment makes this section of particular value to those confronted with spray drying problems. The authors are to be commended for bringing together and adding to the information on this important subject in such excellent fashion.

It is characteristic of this volume that the various authors take pains to point out the areas in which research data is conspicuously lacking. Because of the authors' expertness in their individual fields, these comments perform a valuable and interesting service.

The format and printing of the book is excellent. The reviewer found few typographical errors, none of them of a misleading nature. This volume is a must for all serious food research workers and food technologists.

CHARLES G. FERRARI.

Abstracts

(Continued from page 6 preceding technical papers)

167J. Properties of angel food affected by basic ingredients. Part I.

GLABAU, C. A. *Bakers Weekly, 145,* 46-9, Jan. 2, 1950.

When the sugar is varied, (1) the quantity of all of the other ingredients varies, changing the composition in the formula. (2) The cakes rise more evenly with an increase in the quantity of sugar, more uniformly filling the pans and giving an increase in volume. (3) Sugar has a marked effect upon the upper surface of the cake. The surface also becomes much drier. (4) The cake becomes more tender and softer. (5) Practically all of the characteristics are favorable, giving a higher score value as the quantity of sugar increases. Cakes are scored on eleven attributes in addition to pH, volume, shearing and compressibility tests.

COFFEE

168J. The volatile constituents of roasted coffee.

HUGHES, E. B., AND SMITH, R. F. *J. Soc. Chem. Ind., 68,* 322-7 (1949).

In an investigation into the production of aroma in roasted coffee, some of the principal volatile constituents have been determined. In the staling of coffee, only small losses of aldehydes, acetone, and volatile phenols occurred, and there was no loss of pyridine or of furfural, despite the volatility of these constituents. Apart from a conversion of diacetyl to acetyl-methyl carbinol, no change indicating a loss of aroma was discovered. When coffee was prepared for drinking, some losses of volatile constituents were detected. The substance, or substances, giving the characteristic aroma to roasted coffee is as yet unidentified. It is probable that other less volatile substances, that are soluble in light petroleum and are readily oxidizable, are involved in the flavor of roasted coffee.

FATS AND OILS

169J. Synergistic antioxidants and the methods of preparing the same.

HALL, L. A. Assignor to the Griffith Laboratories, Inc. 2,493,288, Jan. 3, 1950.

The method of incorporating a low alkyl ester of gallic acid in a fatty material in an amount greater than that which is normally soluble in said fatty material, which comprises dissolving ester in a molten phospholipoid, then introducing the molten solution to the fatty composition, likewise in molten form, and thoroughly admixing the materials.

170J. The use of antioxidants in potato chipping.

MAGOFFIN, J. E., AND BENTZ, R. W. *J. Am. Oil Chem. Soc., 26,* 687-91 (1949).

Laboratory and commercial fryings of potato chips made with vegetable oils, vegetable shortenings, and lard were protected by butylated hydroxyanisole through the process. Propyl gallate and citric acid were effective synergists to B. H. A.

FISH AND SEAFOOD

171J. The use of pH measurements for estimating the freshness of cod fillets.

KONDRUP, M. *Fiskeriminist Forsogslab. Medd., No. 73* (1948); *Food Sci. Abst., 21,* 294, No. 1225 (1949).

In Denmark, organoleptic examination by skilled personnel is used to estimate the keeping qualities of cod fillets for export. Samples are kept at 0° C. and the keeping time at this temperature is used as an index. An attempt was made to replace this subjective method by pH measurements. Such measurements were therefore carried out parallel with the organoleptic tests, for a period of over 6 months and on 215 samples, and results were treated statistically. It was found that a pH value of 7.3 normally coincided with the time at which organoleptic tests showed incipient spoilage. However, the standard deviation from this mean was so great (S = 0.25 pH units) that there was only a probability of 16% that incipient spoilage would lie between pH 7.25 and pH 7.35. pH measurements as a means of detecting incipient spoilage in cod fillets must therefore be rejected.

FRUIT AND FRUIT JUICES

172J. Florida coldpressed grapefruit oil.

KESTERSON, J. W. *Am. Perf., 29,* 29-32, Jan., 1950.

Some physical and chemical properties of several grapefruit oils are given. Grapefruit oil from Florida, in general, has been contaminated with orange oil for several years.

JAMS AND JELLIES

173J. Testing consistency with spreadmeter.

Food Pack, 30 (1949).

National Preservers Association suggests a concentric series of circles engraved on plexis to measure spread of preserve as an indication of gel quality.

NUTS

174J. Process of roasting whole nuts.

FISHER, G. A. Assignor to W. S. Scull Co. 2,496,462, Feb. 7, 1950.

The method of preparing salted whole nuts which comprises roasting the nuts, thereafter applying to the roasted nuts whole butter which has been heated at a low temperature until substantially all of the moisture is driven off and thereafter heated to a temperature between 250° F. and 400° F. for a period of ten to twenty minutes on applying salt to the nuts.

175J. Peanut products and process for preparing the same.

OWEN, J. T. Assignor to Merck & Co., Inc., 2,494,717, Jan. 17, 1950.

A peanut preparation stabilized against rancidity comprising peanuts and an external coating of salt containing an inhibitor selected from the group which consists of ascorbic acid, salts of ascorbic acid and esters thereof.

176J. Manufacture of nut butter.

FISHER, G. A. Assignor to W. S. Scull Co., 2,496,461, Feb. 7, 1950.

The process of preparing a substantially stabilized nut butter which comprises roasting the whole nuts, applying to the unground nuts whole butter which has been heated to a temperature between 250° F. and 400° F. for a period of not less than 10 to 20 minutes, and thereafter comminuting the nuts.

177J. Ascorbic acid from walnut hulls.

KLOSE, A. A., et al. *Ind. Eng. Chem., 42,* 387-91, Feb., 1950.

In studies on recovery of ascorbic acid from waste green walnut hulls, an over-all yield of crystalline product of 25 to 50% was obtained. Experimental details are presented for the following steps: extraction in diluted aqueous sulfur dioxide solution; purification of the extract by absorption on, and elution from, anion exchange resin; and crystallization from the concentrated decolorized eluates. Pilot plant scale extraction operations were conducted. Economic analysis of the extraction process indicates that the process is marginal unless other use can be made of the equipment during the off-season.

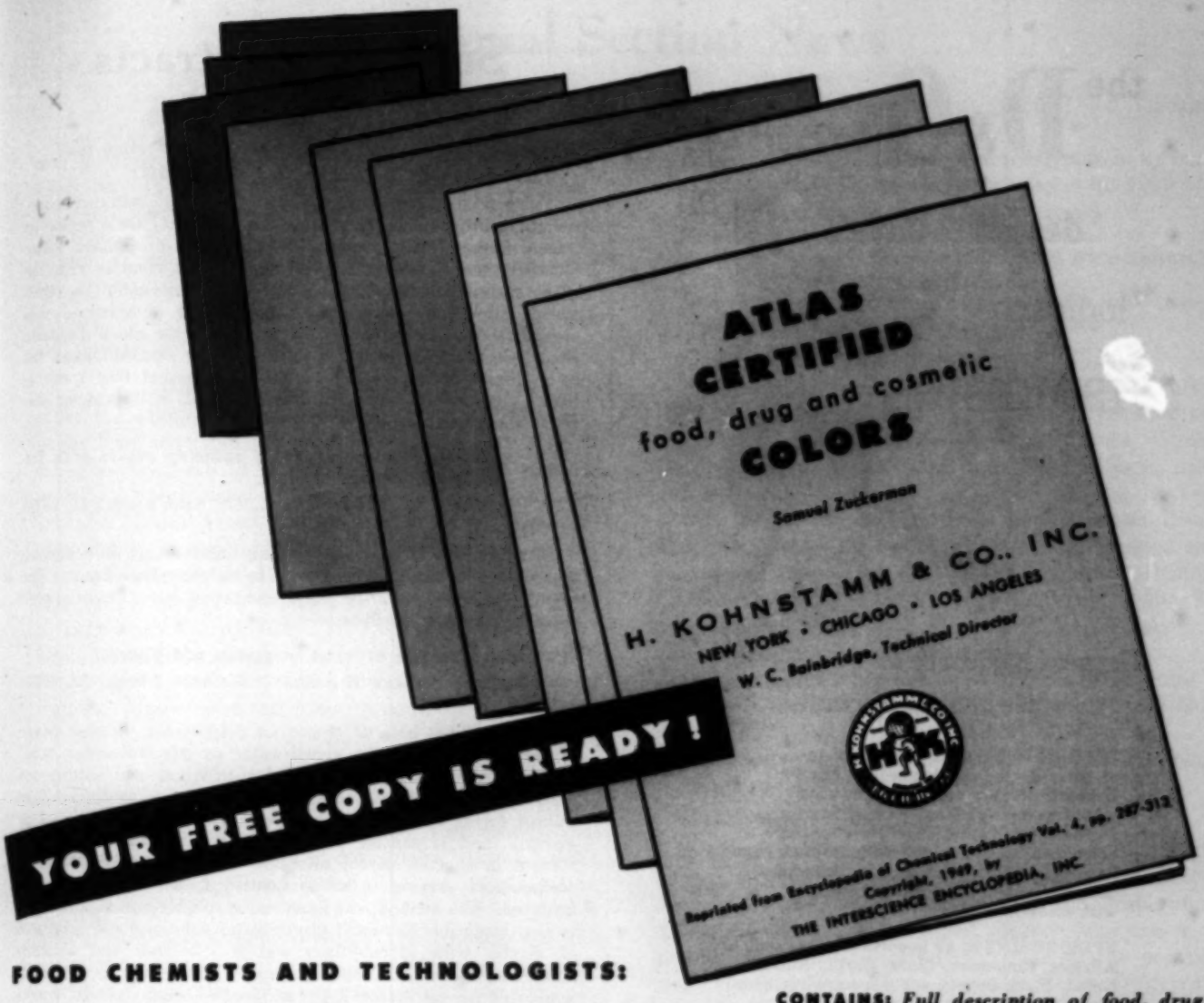
SUGARS

178J. Relative sweetness.

MONCREIFF, R. W. *Flavours, 11,* No. 6, 5-11 (1950).

Part II: Sugar. Absolute rating impossible because apparent sweetness varies with concentration, method of testing, etc. One rather widely accepted listing is fructose (sweetest) sucrose, glucose, galactose, mannitol, lactose. The sweetness of fructose and sucrose, relative to others, decreases as concentration increases. Part III: Other Sweetening Agents. Many α-amino

(Continued on 3rd cover)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Selected Abstracts

ANALYTICAL METHODS

181J. A simple universal dairy products phosphatase test.
KOSIKOWSKY, F. V. *Science, 110,* 480-1 (1949).

Dairy product samples are incubated with a sodium carbonate-sodium bicarbonate buffer substrate at pH 9.5-9.7 for a period of time, then the protein precipitated with an acid precipitant. After filtration, the filtrate is brought back to an alkaline reaction with carbonate, and 2, 6-dibromoquinonechlorimide is then added. Blue color is produced if sufficient phosphatase was present in the milk during incubation to split the added disodium phenyl phosphate in the buffer substrate. For ripened cheese, the color development procedure is the same, except that 1 ml. of 10% Calgon solution is substituted for 1 ml. of the copper sulfate-Calgon solution.

182J. Colorimetric determination of reducing sugars with triphenyltetrazolium chloride.
MATTSON, A. M., AND JENSEN, C. O. *Anal. Chem., 22,* 182-5 (1950).

A convenient method for reducing sugars based on reduction of triphenyltetrazolium chloride to triphenylformazan. The product is a red water-insoluble compound which is measured colorimetrically in pyridine.

183J. Determination of water in glycols and glycerol.
JORDAN, C. B., AND HATCH, V. O. *Anal. Chem., 22,* 177-9 (1950).

A method has been developed for determining the percentage of water, by volume, in glycol-water or glycerol-water solutions. The procedure is a reflux distillation and salting-out process. 1-Butanol was selected as a refluxing medium. This solvent forms an azeotrope with water, but not with glycol or glycerol, and is capable of breaking the hydrates which are formed in aqueous glycol solutions. Forty samples of known composition, varying in water content from 1 to 95% were analyzed. The method was found to be reliable and accurate. It is also applicable to mixed glycol-water solutions and mixtures of glycols with glycol-ethers and/or 1-butanol and alcohols containing more than four carbons. The method is especially applicable to permanent-type antifreeze solutions. It works equally well for new or used antifreeze solutions, with no interference from inhibitors or inorganic impurities.

184J. Determination of sealing strength of paraffin wax.
FUNK, C. S. et al. *Anal. Chem., 22,* 179-82 (1950).

This test method permits the determination of sealing strength of different grades of paraffin waxes, and values can be correlated with results found in commercially waxed paper. With usage a minimum sealing strength can be established that will result in satisfactory seals for bread-wrap paper.

BIOLOGICAL SCIENCES

NUTRITION

185J. Concentration of the unidentified growth factor in condensed fish solubles.
KING, R. H., AND HAUGE, S. M. *Arch. Biochem., 24,* 350-7 (1949).

Condensed fish solubles contain an unidentified rat-growth factor distinct from the chemically defined vitamins and amino acids. The factor is distinct from vitamin B_{12} and unidentified growth substances in distiller's dried solubles. The factor is soluble in water, in ethanol, and in mixtures of acetone, ethanol, and water, is insoluble in ether and in chloroform, is not adsorbed by Fuller's earth, is readily adsorbed by and eluted from Florisil, and is not precipitated by lead. A concentrate of the factor has been obtained which is active at a level of 2 p.p.m. in the diet. This factor is probably responsible for the growth-stimulating effect of condensed fish solubles upon rats and chicks.

(Continued on page 6)

Regional Section News

PHILADELPHIA SECTION

The May meeting was held as an outing, ladies' day and a dinner at the West Chester Golf and Country Club. Wyeth and Co. afforded those attending the meeting the opportunity of visiting the company's penicillin production facilities.

Mr. G. Raymond Rettew, managing director of Wyeth's West Chester Laboratories talked on "Food in a Tank." His interesting talk was illustrated by pictures and demonstrations.

GREAT LAKES SECTION

At the annual business meeting on April 14th and at the Executive meeting on the same date, considerable thought was given to the place of the National meeting in 1952. It all boiled down to the fact that Mackinac Island's Grand Hotel cannot accommodate the 1500 expected to attend; exhibition facilities are also inadequate. Detroit hotels cannot provide exhibition facilities, and there are too few resident IFT members in Detroit to help with the meeting. It was recommended that Grand Rapids be considered, for there is the necessary hotel space available, and exhibitors prefer Grand Rapids. Maybe you can pick up some of that famous furniture cheap, too.

FLORIDA SECTION

The May meeting was held on the 8th at the Citrus Experiment Station at Lake Alfred. Two motion pictures were shown, the first, "Treasure Island," dealt with Dole's pineapple operation; the second, "Vitamin Rivers," told of the processing of fruit and vegetable juices, and was loaned through the courtesy of the American Can Co.

Following are the officers recently elected for 1950-51:

Chairman: W. R. Roy, Minute Maid Corp., Plymouth.
Vice-Chairman: J. A. Woerz, Continental Can Co., Tampa.
Secretary-Treasurer: F. W. Wenzel, Citrus Experiment Station, Lake Alfred.
Section Councilor: D. W. Riester, American Can Co., Tampa.
Executive Committee: Roger Patrick, U. S. Citrus Products Sta., Winter Haven; T. W. Kew, U. S. Citrus Products Sta., Winter Haven; G. N. Pulley, P. O. Box 13, Winter Haven, and R. L. Miller, 701 S. Hyer St., Orlando.

OHIO VALLEY SECTION

The Spring meeting was held on May 6th at Lancaster, Ohio and attended by 84 food technologists and guests. In the morning, the group toured one of Anchor Hocking's glass plants. The theme of the afternoon program was food packaging:

"Tin Plate and Food Preservation," G. C. Jenison, Weirton Steel Co.
"Papers and Films as Related to the Packaging Industry," John Rote, Standard Cap and Seal Corp.
"Organic Coatings for Metals Used in Food Packaging," C. J. Camp, Anchor Hocking Glass Corp.
"Uses of Aluminum in Packaging," P. C. Althen, Aluminum Company of America.
"Glass and its Role in Packaging," W. B. Snell, G. M. Stuntz, Roger Dubble and Alex Hart, Anchor Hocking Glass Corporation.

Following dinner and entertainment George F. Garnatz, Kroger Company, addressed the group on "Experience with Large Consumer Panel for Gauging Product Acceptability."

Following the technical session the group, in its business meeting, elected the following officers for 1950-51:

Chairman: H. D. Brown, Ohio State University
Vice-Chairman: A. J. Glazier, The Kroger Co.
Secretary-Treasurer: Dorothy Culler, Ohio State University.
Councilor: N. H. Volle, The Kroger Co.
Executive Committee: Fred Deatherage, Ohio State University, and H. J. Alleman, Proctor and Gamble.

DIXIE SECTION

Knoxville, Tennessee was the site of the Spring meeting and banquet held on April 21. Preceding the meeting, an inspection trip was made of the Winter Garden Company's fruit and vegetable processing plant and the Tennessee Valley Authority's floating food research laboratories anchored in the Tennessee River. The program of the meeting featured a question and answer section by W. E. Booker, President, Winter Garden Co., and a short talk on standards of quality for processed fruits and vegetables by Mr. John Wegener of the Food Processing Section of the TVA.

Officers elected for the 1950-51 year were John J. Powers, Chairman; Richard D. Haynes, Vice-Chairman; and T. W. Kethley, Secretary-Treasurer.

The spring meeting was well attended by 50 people from the states of Tennessee, Georgia and Alabama.

MOHAWK VALLEY SECTION

A dinner and meeting was held on April 24th at the Canajoharie Hotel, Canajoharie, New York. Dr. George Hucker of the New York Agricultural Experiment Station, Geneva, the scheduled speaker, was unable to attend. Dr. Richard Henderson rose to the occasion and discussed his work at Syracuse University, on the activities of some of the wood rotting fungi and a possible employment of these fungi for the conversion of waste products containing cellulose to useful substances of potential value as cattle feed.

WESTERN NEW YORK SECTION

The annual spring meeting of the Section was held in the Empire Room of the Hotel Powers at Rochester, New York on May 5th. The afternoon session consisted of the following papers:

Some Fundamental Aspects of Starch Chemistry Having Application to Food Problems. C. W. Bice, R. T. French Co., Rochester, N. Y.
Effect of Emulsifiers on Shortening Performance. Noel H. Kuhrt, Distillation Products, Rochester, N. Y.
Measurement of Color in Tomato Juice. Willard B. Robinson, N. Y. Agricultural Experiment Station, Geneva, N. Y.
Effect of Types of Fat on the Structure of Batters and Cakes. Alice M. Briant, College of Home Economics, Ithaca, N. Y.

There was a dinner at 6 P.M., the speaker being Dr. Charles N. Frey, Director of Scientific Relations, Standard Brands, Inc., New York City. Dr. Frey's subject was "Research in the Food Industry in the United States."

TEXAS SECTION

The April meeting was held on the 3rd at Houston in the tap room of the Gulf Brewing Co. Speaker of the

(Continued on page 5)

Once they said "It's the berries!"
When slang was in favor—
Meaning "Great!"—which has always meant
NORDA RASPBERRY FLAVOR!

Go beating around many a raspberry bush, if you want to, out in the hot, hot sun. Pick your own fine, fat berries.

Or do the smart thing—come to Norda!

Norda Raspberry Flavor—red and black—has real raspberry, true-fruit taste. Both genuine and imitation Norda Raspberry are expertly made to help *you* make more popular syrups, mixes, candies, and gelatins. Use Norda for all your products.

Test Norda Raspberry Flavor yourself. Send for free samples—and get your catalogue of all the superior Norda Flavors. Start improving—and saving. Send to Norda today.

Norda Raspberry . . . Another "Favorite to Flavor It"

Norda ESSENTIAL OIL AND CHEMICAL COMPANY, INC.
601 West 26th Street, New York 1, N. Y.

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HAVANA • MEXICO CITY • LONDON • PARIS

I. F. T. EMPLOYMENT SERVICE

In the interest of bringing together organizations seeking the services of food technologists, and food technologists seeking new positions, the Council of the Institute has established the service outlined below.

A. Organizations in the food and allied industries may run notices of positions open in food technology and no charge will be made for this service. Notices will appear over code numbers and replies will be forwarded promptly to the firm running the notice. In no case will the identity of the firm be revealed. To take advantage of this service simply write to the Executive Secretary of the Institute of Food Technologists, 176 W. Adams St., Chicago 3, Illinois, describing briefly the position that is open. Notices received before the 10th of any month will appear in the next issue of FOOD TECHNOLOGY, published on the 5th of the following month. Notices received after the 10th will appear one month later. All that is asked is that the firm or organization running the notice acknowledge to the applicant each application received. Should the position not be filled by one insertion the same notice will be repeated upon request.

B. Members of the Institute seeking new positions may run notices in FOOD TECHNOLOGY at $2.00 per issue. This is about one-fifth the regular space rate. Remittance to cover the cost must accompany the notice. Simply mail your notice with $2.00 to the Executive Secretary.

Notices of positions open or positions wanted will be limited in size to one column inch—approximately 30 words.

Members are requested to bring this service to the attention of personnel directors of their organization.

Wanted, young man to operate laboratory preparing sausage seasonings, compounds for pickling hams, sausage binders, and similar products. Address Box 100, Institute of Food Technologists, 176 W. Adams St., Chicago 3, Ill.

Regional Section News

(Continued from page 3)

meeting was C. E. Lieberman of Gulf Brewing who talked on "Place of Beer in the Diet." Section members toured the American Can Co. plant and also the Gulf Brewing Co. The next day the members toured around Houston.

MARYLAND SECTION

The May meeting was devoted to a consideration of quality control methods and their application to food production and processing. Dr. Amihud Kramer of the University of Maryland, who arranged the program, conducted the sessions and discussions. The afternoon program consisted of the following papers:

Quality Control During Production of Raw Materials. C. H. Mahoney, National Canners Assn., Washington, D. C.

Quality Control During Harvesting and Storage of Raw Materials. J. S. Caldwell, U. S. Dept. Agr. (retired); University of Maryland.

Operational Control in the Plant. Frederick Boland, Schluderberg-Kurdle Co.

Quality Control Instrumentation. A. E. Clawson and E. A. Capelle, Taylor Instrument Co., Rochester, N. Y.

Taste Testing Panels. Elsie Dawson, U. S. Dept. Agr., Beltsville, Md.

Use of Quality Control Charts. H. L. Stier, University of Maryland.

Mathematical Calculations Involved in Statistical Methods. L. D. Calvin, University of North Carolina.

A Specific Example. L. F. Bruns, Crosse & Blackwell, Baltimore, Md.

Evening papers consisted of the following:

Examples of Application. H. A. Hunter, Thomas & Company.

Strawberry Preserves. B. W. Clarke, Crosse & Blackwell, Baltimore, Md.

Whisky. Ted Plant, Calvert Distilleries, Baltimore, Md.

PUGET SOUND SECTION

The first annual banquet of the Section was a dual affair in that the Section wished to focus attention on the food industries of the Pacific Northwest and to emphasize the contributions of food technologists to these industries. There were 175 guests and members attending the banquet, partaking of beverages and food delicacies of the Pacific Northwest. All menu items were donated by local food firms, representatives of which attended as guests. The menu was a gourmet's delight including everything that the tummy craves from appetizers to assorted Washington wines. There was a social mixer prior to the dinner at which time there were hors d'oeuvres and Pacific Northwest drinks: hard, semi-hard and soft.

Dr. T. L. Swenson of Food, Chemical Research Laboratories, Inc., Seattle acted as chairman of the Banquet Committee as well as toastmaster for the evening. Speaker of the evening was Harold D. Van Eation, Director of the Department of Public Institutions of the State of Washington. Outstanding technical, business and civic leaders of the Puget Sound and Pacific Northwest area were invited as guests of honor. There were Raymond B. Allen, President of the University of Washington; Cecil R. Tulley, Executive Vice President of the Northwest Canners Association; Thomas Carter of the State Food and Drug Administration; P. C. Trussel, President of British Columbia Food Technologists; Truman Graves, President of the Seattle Food Brokers Association, Inc.

Entertainment was followed by the distribution of numerous door prizes ranging all the way from table wines to a free haircut.

The evening was indeed a most successful one.

Fritzsche Award Winner Honor Guest at Dinner

Dr. Arie Jan Haagen-Smit, professor of bio-organic chemistry in the biology division of California Institute of Technology, and recipient of this year's annual gold medal-$1,000 Fritzsche Award presented at the 117th National Meeting of the American Chemical Society, was guest of honor at a dinner tendered in his behalf by Mr. F. H. Leonhardt, President of Fritzsche Brothers, Inc., donor of the award. The dinner was given on April 25th in the Colonial Room of the New York Athletic Club.

In response to a toast of welcome offered by Mr. Leonhardt, Dr. Haagen-Smit voiced his great appreciation of the honor that had been bestowed upon him for his investigations into the chemistry of natural products, plant hormones, essential oils and related subjects. He expressed the belief and hope that future researches in the vast and virtually untapped field of plant study throughout the world (scientists now list over a quarter of a million different plants) would eventually yield products of immeasurable value to industry and humanity in general in time to come.

1950 Appert Medal Awarded Thomas M. Rector Posthumously

On Tuesday evening, May 23rd, at the Chicago conference of the Institute of Food Technologists, Col. Rohland A. Isker presented the 1950 Appert Medal as part of a memorial to the medalist: Thomas M. Rector, who died suddenly at Battle Creek, Michigan, on March 31st. Thus has been added another distinguished name —that of Thomas M. Rector—to the roll of outstanding food technologists whose achievements have been recognized by the award of this medal.

PERSONNEL

E. M. Burdick, Director of Research, Texsun Citrus Exchange, Weslaco, Texas, is studying the chemical composition of a yam-like tuber growing wild in Hidalgo County, Texas, to learn if it has any medicinal value for rheumatism; it may be an additional source of cortisone.

Charles W. Kaufman has been named by General Foods Corp. to succeed the late Thomas M. Rector as head of the company's department of research and development. Mr. Kaufman joined General Foods in 1939, was named director of food technology in 1942 and assistant manager of research and development in 1945.

Lloyd K. Riggs, Director of Nutritional Research, National Dairy Research Laboratories, Oakdale, L. I., has been appointed director of the newly-formed division of nutrition and biochemistry of that company.

(Continued on page 14 following technical papers)